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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/728,451

12/05/2003

Roy E. Scheuerlein

MA-112

9337

7590

08/29/2006

Matrix Semiconductor, Inc.  
3230 Scott Blvd  
Santa Clara, CA 95054

EXAMINER

RICHARDS, N DREW

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/728,451	SCHEUERLEIN ET AL.	
	Examiner	Art Unit	
	N. Drew Richards	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 6-29, 33-43, 46-55, 59-73, 75-80 and 83-93 is/are pending in the application.
- 4a) Of the above claim(s) 16-26, 46-54, 70-72 and 75-80 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-15, 27, 33-43, 55, 59-69, 73 and 83-93 is/are allowed.
- 6) ☒ Claim(s) 28 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I and Species IA in the reply filed on 7/15/05 is acknowledged.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Amanuma (US 2001/0038115 A1).

Amanuma discloses a device as claimed in figure 2, for example. The cross section in figure 2 shows a portion of the repeating structure of an array, thus this cross section is repeated many times. With regard to claim 6, Amanuma discloses:

- a first plurality of vias each having a top end and a bottom end (12 on the right side of the transistors formed below; the first vias are considered to extend from the bottom of structure 30 to the top of structure 10);
- a second plurality of vias each having a top end and a bottom end (12 on the left side of the transistors formed below; the second vias are considered to extend

from the bottom of structure 30 to the top of structure 7), wherein the first plurality of vias and the second plurality of vias are vertically overlapping;

- a first routing level at a first height (10) connected to the first plurality of vias at the bottom end of each first via;
- a second routing level at a second height (7) connected to the second plurality of vias at the bottom end of each second via, where the first height is different from the second height;
- wherein both routing levels are formed above the substrate;
- wherein the first routing level and the second routing level are below the first and second vias;
- wherein the first and second vias are evenly spaced and have a common first pitch;
- and further comprising a third routing level 18, the third routing level above the first and second vias connected at the top end of each first and second via vertically opposite the first and second routing levels;
- wherein the third routing level has a fourth pitch substantially less than the first pitch.

With regard to claim 29, the fourth pitch is substantially one half the first pitch.

***Allowable Subject Matter***

4. Claims 6-15, 27, 33-43, 55, 59-69, 73 and 83-93 are allowed.

5. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach, disclose, or suggest, either alone or in combination, the structure and method for providing multilevel electrical connectivity as recited in the allowed claims. Specifically, the prior art does not teach first and second vias connected to first and second routing levels at different heights and connected to a third routing level at a top of the vias, where the first and second vias are evenly spaced and have a common first pitch, and wherein the first and second vias are not connected to any other routing levels below the third routing level and above the first and second routing levels.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2815

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



N. DREW RICHARDS  
PRIMARY EXAMINER